

# Probability and Statistics

Some hidden tree structures in branching and super-processes

**Olav Kallenberg**  
AU, Auburn, AL, USA

A branching process in space is clearly in itself a random tree. Though the discrete tree structure disappears in the diffusion limit, the associated ancestral structure remains a discrete, Yule-type branching Brownian tree generating the entire process. Less obvious is the fact that the higher order moment measures of a super-process can be described in terms of certain finite Brownian trees. This suggests that the distributions of the latter agree with the multivariate Campbell measures, so that the higher order Palm measures can be obtained from a branching Brownian motion by a simple conditioning. Single and higher order Palm distributions have been useful to characterize the local extinction of a stationary branching process and to describe the multi-variate local and conditioning properties of a super-process.